Before the

Federal Communications Commission

Washington, D. C. 20554

In the Matter of:	)	
Amendment of section 95.193(a) and 95.631(d)	)	WT Docket No. 01-339
To authorize manufacture, sale and use of GPS	)	
Transmission Enhanced Family Radio Service	)	RM-10070
Units	)	
	)	
Amendment of Section 95.193(a), 95.193(b)	)	
and 95.193(d) of the Commission's rules	)	
governing permissible communications in the	)	
Family Radio Service.	)	
	)	

REPLY COMMENTS TO THE ABOVE CAPTION PROCEEDING

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A serious lack of good engineering practices and misplaced emotions seems to be guiding just about everyone's comments in this proceeding thus far. As it stands, the Commission has written a NPRM that will undoubtedly lay the foundation for many abuses. Obviously, past examples right under the nose of the Commission have failed to give them a clue. Such issues as the proliferation of the color dot radios without regard to licensing have led the Commission to make it an unlicenced operation called Multi Use Radio System (MURS). Similarly, the infamous and out of control 27 Megahertz CB band had its licensing reduced to nothing. These efforts were undertaken to reduce ambiguity in the law, as they were unable to regulate and/or enforce appropriate action to clean up the mess. Instead, it has been swept under the rug.

On the other hand, Garmin is complaining about having to comply with methods and standards. Yet, their main product line would not be worth a plugged nickel if it did not follow the appropriate methods and standards. It is disingenuous, at best, to claim that methods and standards inhibit development of new and innovative technologies. Having no standards is chaotic and allows each manufacturer to have their own proprietary process that will not work with any other manufacturer's equipment. If that is the case, then it is also disingenuous to offer the supposition that this proposal is going to provide a safety feature, as there is no guarantee that the public will only buy units from the same manufacturer.

Garmin states that the marketplace should drive the technology as long as it operates within the "technical parameters" specified by the Commission. There are two things wrong with that. First, the Commission did not specify any real "technical parameters" relative to the location process. Second, the public (i.e., the marketplace) is incapable of making intelligent decisions that would control the market, and apparently, neither is the Commission. Look at the repeated purchases of junk television sets and telephone equipment by the public that are prone to interference issues the Commission will not, or cannot, correct.

Manufacturers have long lobbied for NOT having methods and standards in the designing and manufacturing of a varied array of consumer electronic products. That is why today's consumer is plagued with generally inferior products and interference issues. Methods and standards provide the bases for sound engineering practices, uniformity among manufacturers and quality for the consumer. Anything less is a disservice to the public and an abuse of the governmental process that should protect the public.

Interestingly, Garmin, who acts to disagree with me, also acts to disagree with themselves. To acquire the waiver they sought, Garmin agreed to the "button" and the "10 Second" concept. Additionally, they further codified it in their proposed "Request for Rule Making." They now seek to dismiss such with some fanciful idea of voice recognition. Evidently they have been watching too much television and the PCS ads. It seems that the game here is to provide widgets rather than useful and functional products.

Additionally, in paragraph 10 of Garmin's reply comments of February 28, 2002, they further argue for an automatic means of data transmission by renouncing the 10 SECOND BUTTON in favor of an unspecified action by the FRS user. Voice recognition, as an offered example, is not a mature process, is not manual in concept and would negate the "manual action" envisioned by the Commission. Further, they argue for a polling process recognizing an important SAFETY issue over the fact that an incapacitated operator may not be able to PUSH the BUTTON (as I previously suggested). Yet, Garmin renounces such elements as unique identifiers, as covered in my original submission, while rebuffing PRSG's recognition of safety issues, arguing that they complicate the regulatory aspect. In fact, it actually introduces a slight burden on the manufacturing process, not the regulatory aspect. Garmin's arguments over such things are disingenuous in that they characterize issues relating to manufacturing as regulatory, hoping that the Commission will forget the facts and change the wording of their

NPRM. Eventually, if Garmin is successful in refuting their own rule making request, there will be no rules over this issue and would render this proceeding moot.

Garmin's idea that tone coded squelch (i.e., continuous tone coded squelch signal [ctcss]) would provide some sort of security is LUDICROUS and demonstrates their naivete of the radio process. The use of tone coded squelch would not reduce (rather, it would increase) the level of interference because the UNSOPHISTICATED PUBLIC would not understand the concept of pushing a monitor button to listen to the channel in the clear before transmitting. By the way, as most of you are either too naive or too young to know, the purpose of tone coded squelch is to reduce the need to listen to unwanted signals on a radio frequency. The use of tone coded squelch implies that the operator of the radio has no way of knowing if the channel is being used unless there is a required monitor function.

In the commercial two-way environment, it was required that a tone squelch system be deactivated when removing the microphone from its holder, thereby forcing the operator to hear other activity on the channel before transmitting and causing interference, particularly with regard to emergency traffic. After checking some FRS radios, it is clear this operating rule was not implemented. Some radios do not even have a monitor button to deactivate the tone coded squelch function.

While on the subject of coded signals, interestingly, Kenwood produces a FRS radio that has a voice scrambling feature in addition to tone coded squelch. The Commission has made no comment on voice scrambling in the FRS rules. However, scrambled voice data sounds like tones, and seemingly would violate the FRS rule about tones above 300 Hertz.

Turning to XM Radio's submission, they should be admonished for submitting such a large

meaningless document (over 30 megabytes). This filing serves little purpose other than to waste time and space. The first 3 or 5 pages were sufficient to describe their concerns. In reviewing their submission, it seems that we have some kids that feel they are entitled to an absolutely clean spectrum with no interference of any kind from any source. This fairy tale view through rose colored glasses is certainly amusing, but also irrelevant to this proceeding. Their "sand box" antics provide no substantive evidence that FRS radios are in fact causing interference on any basis that warrants review. If the FRS radio can cause 5th harmonic energy, then so too can the GMRS radios, as well as other commercial equipment operating in the same frequency range at much greater power levels. To the contrary, their submitted (certified) data showed that, except for one incident of intentional in band radiation (Brinks Security Service), all of the interference accounted for was due to vehicle ignition noise. Based on the preponderance of their submitted evidence, and the mere supposition of a problem, this submission should be considered frivolous.

Mr. Gregory Forrest, of the NCGUG, has made some valid points in his presentation. I am in agreement with Mr. Forrest concerning the proposed language being too general. Further, I agree in general with his assessment of interference in heavily populated areas. Particularly noteworthy is paragraph 7. It calls attention to deliberate misuse of audible tone generation provided for in most FRS radios.

However, I have a problem with his assertion that a weak signal from a FRS radio would trigger the tone squelch circuitry of a GMRS repeater, particularly in view of the fact that they are not on the same frequency. If that is the case, then the following problems may exist, singularly or in some combination: 1) The repeater may be off frequency; 2) The receiver "IF" circuits may be misaligned; 3) The discriminator circuit may be misaligned; or, 4) The "Squelch Tone Decoder" may be over driven.

Mr. Forrest's assertions in paragraphs 12 and 13 are correct, although I suspect the misuse of calling tones will outweigh the GPS data issue. However, the solution presented in paragraphs 14 through 16 is mere supposition based on an improperly referenced and unsubstantiated model that lacks real world testing. I do not think that will resolve the issue. As Mr. Forrest pointed out, the heaviest interference is with mobile and base stations at or near channels 1 through 7. Apparently, Mr. Forrest did not read my original submission or he would have seen the merit in proposing a separate and distinct channel for GPS data bursts.

In paragraph 21, Mr. Forrest proposes to restrict transmission if another signal is present on the channel in use. This has merit for voice transmissions. However, such simplification of the process does not cover instances where unintentionally radiated signals may appear on channel and effectively prevent use of a FRS radio. Mr. Forrest also makes reference to transmissions being delayed for a random period of time as an industry practice. I have no idea where he got such a notion, as I have never heard of such a Willie Nellie random happenstance after over 35 years in the electronic and communication field.

Mr. Forrest, again, apparently did not read my submission or he would have a better understanding of how digital transmissions are applied to analog RF transmitters. This random delay is by no means a method utilized for reducing collisions between transmissions on the same radio frequency. If it is truly random in nature, then, statistically, collisions will occur half the time. Instituting a "channel busy" lockout would render the safety aspect of the digital data burst function useless. A great deal of engineering went into the application of AX.25 (a derivative of the internet X.25) as it is applied to the RF environment. Similarly, a great deal of engineering went into the APRS application of AX.25. Handling collision issues was, obviously, one of the engineering aspects involved in the AX.25 and APRS designs.

Mr. Corwin D. Moore, Jr., reporting for PRSG, takes the level of ALARM to greater heights. In paragraphs 8 and 9, PRSG makes a case for the total number of combinations of radio channels and tone coded squelch selections as though they are separate entities. This is a favorite MARKETING ploy, and it seems that those in the Personal Radio field are equally confused by the obfuscation of the true technical specifications. While there are more than 500 possible channel and tone squelch combinations, it is an irrelevant figure. There are only 14 RF channels. The most traffic within a confined area (e.g. the amusement park example in para. 8), without interference at any one time, is 14 transmitters on 14 separate channels. Mr. Moore's understanding of channel capacity is wrong, as the actual level of interference would be much greater.

PRSG suggests that there be a voice transmission between data transmissions. How is that going to be accomplished ? Instead of just a 1 second data burst, a voice transmission of an indeterminate length would have to be made, plus the data burst ! How would that reduce interference ? There would now be two transmissions, where before there would have been a single very short one.

PRSG makes characterizations about the USERS and their use of FRS in paragraphs 12, 14, 16, 17 and 18. While such assertions can be made, PRSG chooses to display these assertions in the negative, as though some evil intent is afoot. For example, the assumption in paragraph 12 is that a person sending GPS data also wants to talk. Really ? What if this function is being used by a paintball team that is trying to elude another team in a highly skilled and elaborate playing field ? Here making noise is clearly detrimental to the effort. Is this real ? You bet ! Paintball is a serious business for the players as they strive to improve their skills just like any other athlete. More to the point would be a search and rescue scenario where the user is incapacitated and unable to speak. In such a case, there would be no voice communication.

Another assumption is that a person is going to use the GPS data for recreational use, or more seedily, for some frivolous act. There has been NO definition as to how GPS use will be applied by the user, save for the transmitting period and the usual commission of a crime warning. And rightly so, for how do you regulate a function that is, by definition, essentially unregulated and unenforceable (FRS requires no license - i.e., unregulated) ?

PRSG states restricting data burst with voice in-between would somehow discourage use of FRS around commercial and industrial environments. Here PRSG is clearly confused on the use that occurs in such areas. The need in such circumstances is for short range communication by voice between various personnel operating in warehouses, storage yards, automotive sales areas, construction crews (FRS is a cheaper alternative), small businesses that have several facilities within the same complex and even automotive junk yards. At no time is the use of GPS viable for the above types of communications. Therefore, this issue is not relevant !

In paragraph 16, there is another innocuous concern that does not bear fruit. Here PRSG is assuming that the processor in the radio would be powerful enough for the projected scenario and there would be plenty of computer functionality. This is pure nonsense, for if that was of interest the true hackers would already be using FRS for such purposes with their own hardware. I have seen no evidence of that.

Paragraph 18 takes the GRAND PRIZE !!! While subjectively possible, it is very highly unlikely. However, Garmin and other manufacturers can handle that issue in firmware. Methods can be developed that could easily make it **VERY HARD** for an outsider to gain the electronic advantage, particularly if **UNIQUE** identifiers would be used as outlined in my original submission. A third identifier (i.e., a password) could be used that would scramble the

identification portion of the message so that an outside party would not know who they were tracking.

Apparently PRSG did not read my earlier submission either, for they do not have an understanding of the methods and standards of how digital data is used in the analog RF world. The balance of the PRSG presentation centers around a “make me feel good” line of commentary demanding various unenforceable and/or ill-advised constraints. What really seems to be the underlying intent of this PRSG submission is one of control due to their perception that FRS is inferior to the position and purpose of GMRS.

While the Commission and Garmin do not feel any methods and standards should be imposed, it is quite apparent others do not share the same viewpoint. Even Garmin regresses from their original request to the point they will probably request further relaxation of the rules. The Commission’s current stance suggests other uses will emerge and be accepted, even though they state they do not want to deviate from the original intent of FRS.

Legitimate concerns warrant a more detailed **engineering** study and reassessment of the intent of these rule modifications. Rather than satisfying everyone’s instant demands by piecemeal revisions, a wiser course would be to lay the groundwork for proper application of technological advances and appropriate controls thereof.

Finally, as there is a major problem with homeland security and the United States postal system, and keeping in line with the Commission’s request that all submissions be by electronic means, I hereby submit this document through the ECFS system. As all parties have the opportunity to instant access of material via the ECFS, I will consider the submission to that system as constituting any requirement of notice to other parties participating in this

proceeding. As this submission does not contain any Ex Parte matters to my knowledge, posting by electronic means to the ECFS system should suffice.

Respectfully submitted,

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